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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/915,984 | 07/25/2001 | Udo Hartmann | MUH-11618 | 8173 |

7590 12/16/2002
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| EXAMINER |
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PATEL, PARESH H

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| ART UNIT | PAPER NUMBER |
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2829

DATE MAILED: 12/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/915,984

Applicant(s)

HARTMANN, UDO

Examiner

Paresh Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a) because they fail to show optical wave guides and a test program as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

1) On page 3, lines 4-9 it is clear that the distance between conduction band and valence band of defective semiconductor device has lower value as compared with that of defect-free semiconductor device. But the specification is unclear about what and/or how this distance was measured and compared.

2) On page 4, lines 9-14 it not clear that how and/or what will determine that electron in the semiconductor device are passing from the valence band into the conduction band. Also it is unclear that, defective semiconductor device has small value of energy while the energy received by the electron of the semiconductor device is known.

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3) On the same page and matter discussed above, if the energy is consumed by the semiconductor device then it is not clear what and/or how this energy was measured.

4) Again on page 4, lines 18-24 it is not clear what and/or how the distance between the conduction band and valence band is measured to determine "poor" semiconductor device.

5) On page 5, lines 1-7 it is not clear that how and/or what determines that electron is transferring from the valence band into conduction band at energy $E = 2.5\text{eV}$.

6) On page 5, lines 21-23 wherein the semiconductor devices are subject to a test cycle but the test cycle is not defined through out specification.

7) On page 6, lines 17-24, it is clear that test program stores the wavelength(s) corresponds to an excessively small distance between the valence band and conduction band of the memory cell(s), but the specification do not support, that the test program includes program for on and off operation of the light source.

8) On page 7, lines 2-7 it is not clear how and/or what determines the defective memory cells and what measures the distance between the valence band and the conduction band.

9) On page 10, lines 1-5: is the voltage supply is necessary for wafer as part of writing to chips as stated on page 6 or is it something else. If so, what?

10) on page 11, lines 9-11 it is not clear how and/or what determines a transition of electrons from the valence band to the conduction band?

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11) on page 11, lines 11-15: is the stored information in memory cells is a written step as disclosed in lines 1-3 on same page or is it something else. If so, what?

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling.

A device for writing to the memory cells is a critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). An apparatus for testing as enabled by specification must have the device for writing to the memory chips. Therefore the invention of claim 1 which omits this is neither enabled by specification nor described by it.

Claims 2-8 are also rejected because they depend from rejected claim.

- Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling.

A device to measure the distance between conduction band and the valence band is critical or essential to the practice of the invention, but not included in the

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claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). An apparatus for testing as enabled by the specification must have a device for measuring the distance between conduction band and the valence band. Therefore the invention of claim 1 which omits this device is neither enabled by specification or described by it.

Claims 2-8 are also rejected because they depend from rejected claim.

- Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling.

A device to compare the distance between conduction band and the valence band of defective and defect-free semiconductor devices is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). An apparatus for testing as enabled by the specification must have a device to compare the distance between conduction band and the valence band of defective and defect-free semiconductor devices. Therefore the invention of claim 1 which omits this device is neither enabled by specification or described by it.

Claims 2-8 are also rejected because they depend from rejected claim.

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- Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling.

A device to detect electron transfer in the semiconductor devices is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). An apparatus for testing as enabled by the specification must have a device to detect electron transfer in the semiconductor devices. Therefore the invention of claim 1 which omits this device is neither enabled by specification or described by it.

Claims 2-8 are also rejected because they depend from rejected claim.

- Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. An apparatus for testing as enabled by specification must have a device for writing to the memory chips. Therefore the invention of claim 1 which omits this is neither enabled by specification nor described by it.

Claims 2-8 are also rejected because they depend from rejected claim.

- Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 recites a

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distance between the valence band and conduction band of defective semiconductor devices is compared with that of defect-free ones of the semiconductor devices. The specification does not describe at all nor does it enable how this is to be achieved.

Claims 2-8 are also rejected because they depend from rejected claim.

Claim Objections

Claim 2 is objected to because of the following informalities: at line 2 "chips" should read -- devices --. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: a device to write in semiconductor devices; a device to measure the distance between valence band and conduction band of the semiconductor devices; a device to compare the distance

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between valence band and conduction band of defective and defect-free semiconductor devices and a device to detect electron transfer in semiconductor devices.

Claims 2-8 are rejected because they depend from rejected claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Bottka (US 5365334).

Regarding claim Bottka in fig. 1-4 discloses: an apparatus [fig. 1] for testing semiconductor devices [12] to find defective semiconductor devices in which a distance between a valence band and a conduction band [lines 39-42 of column 2] has a lower value as compared with that of defect-free semiconductor devices, the apparatus comprising:

a tunable light source [10] for projecting light onto semiconductor devices [lines 60-65 of column 5]; said tunable light source being constructed to adjust the light to a specific wavelength [lines 18-20 of column 5] and to a specific intensity [20] and to project the light for a predetermined time [46] so that when the semiconductor devices are irradiated with the light, electrons in defective ones of the semiconductor devices, in which a distance between a valence band and a conduction band [lines 39-51 of column

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2 and equation 1-6] has a lower value as compared with that of defect-free ones of the semiconductor devices [lines 51-56 of column 6], can be transferred into the conduction band from the valence band [lines 29-36 of column 6].

Regarding claim 2, Bottka discloses: the semiconductor *devices* (chips) are wafer-level memory chips [inherent to sample 12 and lines 21-24 of column 1].

Regarding claim 3, Bottka discloses: said tunable light source is constructed to regulate a frequency of the projected light in a continuously variable manner [lines 18-20 of column 5].

Regarding claim 4, Bottka discloses: a wafer sampler providing a housing for said light source [housing of 10].

Regarding claim 5, Bottka discloses:

a surface for positioning [42] the semiconductor devices thereon;

a component [40] selected from the group consisting of said tunable light source and said surface being moveably disposed to adjust a relative position between said tunable light source and said surface.

Regarding claim 6, Bottka discloses: said tunable light source includes optical fibers [14] having ends [22], said ends of said optical fibers for projecting the light onto the semiconductor devices.

Regarding claim 7, Bottka discloses: in combination with the semiconductor devices, wherein the semiconductor devices are memory chips having memory cells [inherent to 12] that have been written to [lines 50-51 of column 2].

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Regarding claim 8, Bottka discloses: a voltage supply for supplying a voltage to the semiconductor devices [lines 50-51 of column 2] during testing of the semiconductor devices.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paresh Patel whose telephone number is 703-306-5859. The examiner can normally be reached on M-F (8:30 to 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 703-308-1233. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Paresh Patel
December 9, 2002



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